but usually in a single bunch; and third, that the individual bundles of catgut are apt to be broken up outside the wound, "for the capillary action occurs in the intervals between the threads when they are closely apposed." Finally, such drains will *not* do for anything but blood or *serous* discharges. Numerous illustrations and descriptions are given of the most effectual methods of retaining the edges of the antiseptic dressings in contact with body surfaces, the neglect of which is a most fruitful source of failure in this method. Speaking of wounds of the abdomen with protrusion of omentum where the latter is very dirty or difficult of return, the author advises resort to Dr. Kenneth McLeod's plan of "stitching the deepest part of the omentum to the deep part of the wound, cutting off the remainder and closing the skin over all."

When adverting to Mr. J. Hutchinson's successful treatment of wounds he shows that Wilhelm Hack has proved that carbolic acid applied directly to *granulations* so modifies their power of preventing absorption that they act almost like recent wounds, thus showing the inadvisability of using this substance except aseptically, *i. e.*, not in direct contact with the wound; and that pure alcohol, applied to granulations for a time, in great part or entirely prevents absorption through them. Mr. Cheyne says, "The favorable results of constant irrigation, especially when antiseptic fluids are employed, in preventing septic diseases are very remarkable, and, in this respect, it probably stands next to strict aseptic treatment." We can fully endorse this statement.

"The method of treatment which has been the greatest stumbling-block in the way of the acceptance of the principles of antiseptic surgery is the open method, for surgeons could not see how the success of this method could be reconciled with the germ-theory of putrefaction." In brief, without demonstrating in detail the truth of the author's propositions (which we did elsewhere years ago), the good results of the open method are due to perfect rest, free drainage, and concentration of the fluids and their admixture with oxygen; the former renders them unfit soil for the growth of bacteria, while by means of the latter those organisms which do grow get their oxygen from the atmosphere, and do not break up organic compounds, thus avoiding the formation of ptomaines. In addition, oxygen, according to Pasteur, is actually destructive to the bacteria of putrefaction. It will be observed in conclusion that we have merely stated the author's views, and have not indulged in much comment thereon. This is simply because we thoroughly agree with the writer upon almost every point, and this after extensive experience with most, if not all, of the methods he describes. It is a most valuable book, and those who do not care to go to the expense of his larger work cannot do better than to purchase this little treatise.

C. B. N.

ART. XXXV.—*Vorträge aus dem gesammtgebeite der Augenheilkunde.* Von Dr. LUDWIG MAUTHNER, k.k., Prof. in Wien. 12te Heft. *Die ursächlichen Momente der Augenmuskellähmungen: die Nuclearlähmung. Wiesbaden*, 1885.

The Causal Conditions of Muscular Paralysis of the Eye: Nuclear Paralysis. By Prof. L. MAUTHNER.

THIS part of Prof. Mauthner's important and comprehensive work on general ophthalmology is of interest, not only to the practising ophthalmologist, who will find in it the fullest consideration of the subject to be found in ophthalmic literature, but also to the physician who has to deal with nervous affections in their various forms and phases, for the whole of the instalment before us is given up to the study of the central causes of muscular paralysis of the eye.

Preceding, however, an investigation of these causes, there is a very short but sufficiently clear exposition of the function of the six external and the two internal muscles of the eye, and of the methods by which a paralysis of each and all may be diagnosticated. These methods are well known to all ophthalmic surgeons, and are to be found in all treatises on the eye. Their further consideration here is therefore unnecessary.

The cranial nerves that supply the eye muscles are the 3d, 4th, and 6th pairs, and it is readily understood that an affection of any one would lead to impairment in the function of the corresponding muscle or muscles. Pressure on the 6th nerve, for example, should cause paralysis of the abducens; on the 4th, the trochlearis; while, if it be on the 3d, all the remaining six muscles together with the elevator of the lid will be affected. Clinically, however, we do not find paralysis distributed in keeping with this arrangement, and it is this fact which lies at the foundation of the brochure before us. As the 4th and 6th nerves supply a single muscle each, their paralysis can affect only their respective muscles; but it is otherwise with the 3d, which supplies four of the external and the two internal (recti sup. inf. and int.; oblique inf.; iris, and muscle of accommodation). We find in practice that any one of these muscles may be affected, the others remaining intact, or that any number short of the whole may be implicated. To explain this phenomenon is the attempt of Prof. Mauthner in his idea of a "nuclear paralysis."

Recently there has been an attempt to divide ophthalmoplegia into two general heads of "external" and "internal." For certain purposes it is a useful classification, but Mauthner very properly suggests that these forms of ophthalmoplegia can be, for etymological reasons, more properly called "interior" and "exterior." A further subdivision is into "perfecta" and "imperfecta;" and also one into "unilateralis" and "bilateralis."

Coming now to study the aspects of muscular paralysis as clinically presented we find: 1. That we may have all the exterior muscles affected, the interior remaining intact. 2. Any one or more of the external muscles may be affected. 3. The interior muscles may be affected alone. 4. Either of the interior muscles may be affected alone. In support of this proposition Mauthner gives often in great detail the clinical histories of cases gathered from the literature on the subject from the time of Gräfe down to the present. These clinical facts can only be accounted for, in the opinion of the author, by the existence of a separate centre for the nerve-fibres going to each muscle. And it is but fair to state that experimentation on the cerebral functions conducted by Hansen and Völkers and others lends strong support to this view.

There are, however, other forms of paralysis than the nuclear. Excluding the causes operating in the orbit, we have the cerebral and basal: the former embracing those cases having their seat in the brain itself; the latter those to be found operating on the nerve somewhere in its course along the base of the skull. The cerebral forms include: 1, the cortical, in which the cortical gray substance concerned in the movements of the eyes is affected; 2, the nuclear, in which the seat of trouble is that collection of nerve-cells lying in the gray hollow of the 3d ventricle, the aqueductus Sylvii and the 4th ventricle; 3, the fascicular, where the fibres which connect the cortical substance with this collection of cells is impressed. It is the opinion of the author that these cells in the 3d and 4th ventricles are the centres of affection in most cases of central paralysis of the eye-muscles, and the fact that there is isolated paralysis of a single muscle or groups of muscles must be accounted for on the supposition of a separate centre for each. A scheme of arrangement of such centres was proposed by Hansen and Völkers, but to the author's mind it is not so satisfactory, in view of the observed facts, as that of Kahler and Pick. Going from before backward their arrangement is:—

1. Muscle of Accommodation.
2. Sphincter Iridis.

Medial.
3. Rectus internus.
4. Rectus inferior.

Lateral.
5. Levator palp. sup.
6. Rectus superior.
7. Obliques inferior.

Trochlearis.

The reason for the acceptance of this plan is that it coincides quite accurately with the order in which the muscles are affected in progressive paralysis, in which case it is supposed that the morbific cause affects the centres successively, and clinical evidence is brought in support of the proposition.

The author discards entirely Hutchinson's idea of an involvement of the lenticular ganglion within the orbit as a cause of a paralysis of the interior eye-muscles. In such cases, by no means rare, it is supposed that centres 1 and 2 of Kahler and Pick are affected. Moreover, from a careful study of the clinical histories of the reported cases, the author is convinced that there is no associated nuclear paralysis, as is thought to be the case by some, and that there is no crossing of the fibres to the cell-centres of the opposite side; that, in other words, the nerves for the muscle of each eye have their centres on the same side.

The causes of nuclear affection are various, and may be primary or secondary; among them may be noted ependymitis with secondary affection of the gray arches, restiform or multiple sclerosis, and all those affections which lead to atrophy of ganglion-cells. Unquestionably hemorrhage into the ventricles has produced the paralysis in several reported instances. Syphilis is in some cases a remote cause. Of treatment the author will speak after he has considered the other forms and varieties of eye-muscle paralysis. S. M. B.

ART. XXXVI.—*Operative Surgery in the Calcutta Medical College Hospital: Statistics, Cases, and Comments.* By KENNETH McLEOD, A.M., M.D., F.R.C.S.E., Fellow of the University of Calcutta; Surgeon-Major Indian Medical Service; Professor of Surgery Calcutta Medical College; and First Surgeon College Hospital. 8vo., pp. 340. London: J. & A. Churchill, 1885.

FROM its very nature, consisting as it does of the abstracted histories of a large number of carefully observed cases, this book cannot fail to be of